DETAILED ACTION

Drawings

1. The drawings are objected to because they do not show the halogen bulb (70), pulsed xenon lamp (70), optical fibers (72), probe (74), spectrophotometer (76), data processor (80), and monitor (82) in figure 14 as described in the specification (page 16). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 9, 11, 13, 14, and 16 rejected under 35 U.S.C. 102 (b) as being anticipated by Gross et al., (WO 01/69213).

4. With regards to claim 9, Gross et al., teach an apparatus with a light source (page 18 lines 19-22), means for collecting light reflected from the sample (page 18 line 29-page 19 line 2), means for spectrally analyzing the reflected light (page 18 line 29-page 19 line 2). In addition, Gross et al., teach the sample on a conveyor belt or in a container which generates the top, intermediate, and undersurfaces (page 15 lines 19 and 20) as well as a probe that is inserted into the sample so that the intermediate layer is analyzed (page 17 lines 19-22).

5. With regards to claim 11, Gross et al., teach an apparatus where the light source and collecting means for the refracted light are optical fibers (page 24 lines 15-page 25 line 3).

6. With regards to claim 13, Gross et al., teach a probe head that displaces the top layer of the sample material, thereby allowing the intermediate layer to be analyzed (page 17 lines 19-22).

7. With regards to claim 16, Gross et al., teach an apparatus that can be used to analyze material in a slurry (page 35 lines 11-13). The apparatus described by Gross does not explicitly teach a pipe along which the slurry flows; however the use of a slurry implies flow along a pipe thereby making it an inherent property of the apparatus. One

of skill in the art may elect to use a container or conveyor with a slurry, however the apparatus of Gross et al., sufficiently reads on containers and conveyor belts (page 14 line 30-page 15 line 20) as means in which the apparatus can be used to analyze a sample material.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1, 2, 4, 5, 7, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gross et al., (WO 01/69213).

11. With regards to claim 1, Gross teach a method where the sample of granular material is movable through an illumination zone (page 23 lines 4-13, page 27 lines 8-9) where a light source directs light on the sample (page 18 lines 19-22). Gross et al., also teach collecting light reflected from the sample (page 18 line 29-page 19 line 2), spectrally analyzing the reflected light. In addition, Gross et al., teach a sample that lies

on a conveyor belt which reads on the top, intermediate, and undersurfaces (page 15 lines 16-20), and a probe that is inserted into the sample so that the intermediate layer of the sample is being analyzed (page 17 lines 19-22). Gross et al., does not teach the analysis of a mineral; however since Gross et al., teach analysis of granular material it would have been obvious to one of ordinary skill in the art at the time of the invention to use the teachings of Gross et al., to analyze a granular mineral sample to determine the physical and chemical properties of the mineral sample with the reasonable expectation of success.

12. With regards to claim 2, the method of Gross et al., involves inserting a probe into the sample so that the spectral analysis is performed on the intermediate layer (page 17 lines 19-22).

13. With regards to claim 4, insertion of the probe into the sample displaces the top layer, thereby performing the same function as the scraper of claim 4 (page 17 lines 19-22).

14. With regards to claim 5, the method of Gross et al., teach spectral analysis on a slurry (page 35 lines 11-13). The method described by Gross et al., does not explicitly teach a pipe along which the slurry flows; however the use of a slurry implies flow along a pipe thereby making it an inherent property of the apparatus used with this method. One of skill in the art may elect to use a container or conveyor with a slurry, however the method of Gross et al., sufficiently reads on containers and conveyor belts (page 15 line 9, 19-21) as means in which the apparatus can be used to analyze a sample material.

15. With regards to claim 7 and 14, Gross et al., teach a method and apparatus for spectral analysis of a granular material in a vertical container having a transparent wall (page 16 lines 3-8). Gross et al., does not teach the method of rotating the container, or an apparatus that includes means for rotating the container. Rotating the container performs the function of mixing the granular material to prevent settling and to allow for the analysis of a representative sample. One of skill in the art may choose other methods of mixing the granular material; however the end result of mixing the sample would remain the same. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a method and apparatus where the granular material is sufficiently mixed, thereby allowing analysis of a representative sample of granular material.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwan A. Gerido whose telephone number is (571) 270-3714. The examiner can normally be reached on Monday-Friday, 7:30am to 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mikhail Kornakov can be reached on (571) 272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DAG

/Michael Kornakov/

Supervisory Patent Examiner, Art Unit 4151